Claim Amendment under 37 C.F.R. §1.121

Claim 1. (Currently Amended) A recycling method of a mixed waste of polyester and polyamide, comprising:

(a) depolymerizing the mixed waste of polyester and polyamide;

(b) polycondensing the depolymerized product with a polyhydric alcohol to obtain a polyester-amide block polymer having an acid value of 1 to 150 mgKOH/g; and

(c) recovering the polyester-amide block polymer in a solid or solution state where the acid value is greater than 20 mgKOH/g, or recovering the polyester- amide block polymer in a solid state where the acid value is less than 20 mgKOH/g,

wherein in the step (b) a polyamide-producing monomer or waste polyamide is additionally added and reacted to produce a polyamide block, wherein the polyamide-producing monomer or waste polyamide is added in content of 1 to 90% by weight to the prepared polymer, wherein the polyamide-producing monomer is at least one selected from the group consisting of lactams containing more than 6 carbon atoms, aliphatic amino carboxylic acids, and polycondensation products of diacid and diamine, and wherein the waste polyamide is 6-nylon, 6,6-nylon, 11-nylon, or 12-nylon.

Claim 2. (Original) The method according to claim 1, wherein step (a) includes (a-1) reacting the mixed waste of polyester and polyamide with a solid resin dissolving agent to carry out first depolymerization; and (a-2) reacting the depolymerized product with a polybasic acid to carry out a second depolymerization and addition reaction (Diels-Alder Reaction).

Claim 3. (Original) The method according claim 2, wherein the solid resin dissolving agent is at least one selected from the group consisting of gum rosin, wood rosin, tall rosin, hydrogenated rosin, maleated rosin, rosin ester, pinene resin, dipentene resin, C5 petroleum resin, C9 petroleum resin, dammar resin, copal resin, DCPD resin, hy- drogenated DCPD resin and maleated styrene resin.

Claim 4. (Original) The method according claim 2, wherein the mixing ratio of the solid resin dissolving agent: mixed waste is in the range of 1: 10 to 10: 1, on the basis of weight ratio.

Claim 5. (Original) The method according claim 2, wherein the polybasic acid is at least one selected from the group consisting of anhydrous phthalic acid, isophthalic acid, terephthalic acid, adipic acid, azelaic acid, sebacic acid, anhydrous tetrahy- drophthalic acid, anhydrous maleic acid, fumaric acid, itaconic acid, trimellitic acid, anhydrous trimellitic acid, anhydrous pyromellitic acid, succinic acid, cy- clohexane dicarboxylic acid, naphthalene dicarboxylic acid, dimeric acid and C6-C25 fatty acid.

Claim 6. (Original) The method according claim 2, wherein the polybasic acid is used in an amount of 1 to 70% by weight, based on the weight of the first depolymerization product.

Claim 7. (Original) The method according claim 1, wherein steps (a) and (b) are carried out in the presence of 0.05 to 0.5% by weight of a reaction catalyst, based on the total weight of reactants.

Claim 8. (Original) The method according to claim 1, wherein steps (a) and (b) are carried out in the range of 200 to 250 C.

Claim 9. (Original) The method according to claim 1, wherein the polyhydric alcohol in step (b) is at least one selected from the group consisting of ethylene glycol. propylene glycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, neopentyl glycol, diethylene glycol, dipropylene glycol. polyethylene glycol, alkylene oxide adduct of bisphenol A, trimethylol propane, glycerin, pentaerythritol, fatty acid mono- glyceride, and mono polyhydric alcoholide of fatty acid.

Claim 10. (Original) The method according to claim 1. wherein the polyhydric alcohol in step (b) is used in an amount of 1 to 70% by weight, based on the weight of the de-polymerized product in step (a).

Claim 11. (Original) The method according to claim 1, wherein the polyester-amide block polymer prepared in step (b) has a weight average molecular weight of 3,000 to 50,000.

Claim 12. (Original) The method according to claim 1, wherein the polyester-amide block polymer prepared in step (b) has a softening point of 10 to 150 C.

Claim 13. (Original) The method according to claim 1, wherein the polyester-amide block polymer solution in step (c) is obtained by a method comprising (c-1) reacting the polyester-amide polymer of step (b) with a basic compound to obtain a neutralized polyester-amide block polymer; and (c-2) dissolving the neutralized polyester-amide block polymer in water, a hydrophilic solvent or a mixture thereof.

Claim 14. (Original) The method according to claim 13, wherein the basic compound is at least one selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, lithium hydroxide and organic amines.

Claim 15. (Original) The method according to claim 13, wherein the basic compound is used in an amount of 1 to 30% by weight, based on the weight of the polyester-amide block polymer.

Claim 16. (Original) The method according to claim 13, wherein the hydrophilic solvent is at least one selected from the group consisting of alcohols, ethers, acetone, diacetone alcohol, dimethyl formamide, dimethyl acetamide, tetrahydrofuran, ethyl cellosolve, propyl cellosolve, butyl cellosolve and N-methyl-2-pyrollidone.

Claim 17. (Original) The method according to claim 13, wherein water, the hydrophilic solvent or a mixed solvent thereof is used in 1 to 10-times amount based on the weight of the neutralized polyester-amide block polymer.

Claim 18. (Currently Amended) A recycling method of a mixed waste of polyester and polyamide, comprising:

(a) reacting the mixed waste of polyester and polyamide with a polyhydric alcohol to obtain a polyester-amide depolymerization product;

(b) reacting the depolymerized product with a polybasic acid, and poly- condensing the reaction product with the polyhydric alcohol to obtain a polyester-amide block polymer containing 2 or 3 carboxyl groups at chain ends thereof and having an acid value of 1 to 150 mgKOH/g; and

(c) reacting the polyester-amide block polymer with a basic compound to obtain a polyester-amide block polymer in the form of a neutralized salt, followed by dispersing in water, a hydrophilic solvent or a mixed solvent thereof to obtain a water-soluble and water-dispersible polyester solution,

wherein In the step (b) a polyamide-producing monomer or waste polyamide is additionally added and reacted to produce a polyamide block, wherein the polyamide-producing monomer or waste polyamide is added in content of 1 to 90% by weight to the prepared polymer, wherein the polyamide-producing monomer is at least one selected from the group consisting of lactams containing more than 6 carbon atoms, aliphatic amino carboxylic acids, and polycondensation products of diacid and diamine, and wherein the waste polyamide is 6-nylon, 6,6-nylon, 11-nylon, or 12-nylon.

Claim 19. (Original) The method according to claim 18, wherein the basic compound is at least one selected from the group consisting of sodium hydroxide. potassium hydroxide, ammonium hydroxide, lithium hydroxide and organic amines.

Claim 20. (Original) The method according to claim 18, wherein the basic compound is used in an amount of 1 to 30% by weight, based on the weight of the polyester-amide block polymer in step (b).

Claim 21. (Currently Amended) A recycling method of a mixed waste of polyester and polyamide, comprising:

(a) reacting the mixed waste of polyester and polyamide with a polyhydric alcohol to depolymerize the mixed waste, and stabilizing the resulting product with a depolymerization-stabilizing solid resin to obtain a stabilized polyester de- polymerization product;

(b) polycondensing the depolymerized product with a polybasic acid, dimethyl 5-sodium sulfoisophthalate (DMSSIP) or a mixture thereof, and adding an acid value-adjusting polyhydric alcohol to the resulting reaction product to obtain a polyester-amide block polymer; and

(c) recovering the polyester-amide block polymer in the form of an aqueous solution where the polymer is dissolved in water, in the form of an organic solution where the polymer is dissolved in a hydrophilic organic solvent, or in solid form,

wherein In the step (b) a polyamide-producing monomer or waste polyamide is additionally added and reacted to produce a polyamide block, wherein the polyamide-producing monomer or waste polyamide is added in content of 1 to 90% by weight to the prepared polymer, wherein the polyamide-producing monomer is at least one selected from the group consisting of lactams containing more than 6 carbon atoms, aliphatic amino carboxylic acids, and polycondensation products of diacid and diamine, and wherein the waste polyamide is 6-nylon, 6,6-nylon, 11-nylon, or 12-nylon.

Claim 22. (Original) The method according to claim 21, wherein the depolymerization-stabilizing solid resin is at least one selected from the group consisting of gum rosin, wood rosin, tall rosin, hydrogenated rosin, maleated rosin, rosin ester, pinene resin, dipentene resin, C5 petroleum resin. C9 petroleum resin, dammar resin, copal resin, DCPD resin, hydrogenated DCPD resin and maleated styrene resin.

Claim 23. (Original) The method according to claim 21, wherein the depolymerization-stabilizing solid resin is used in an amount of 1 to 100% by weight, based on the weight of the depolymerization product.

Claim 24. (Previously Amended) The method according to claim 21, wherein the polyhydric alcohol is at least one selected from the group consisting of ethylene glycol, propylene glycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, neopentyl glycol, diethylene glycol, dipropylene glycol, polyethylene glycol, alkylene oxide adduct of bisphenol A, trimethylol propane, glycerin, pentaerythritol, fatty acid mono- glyceride, and mono polyhydric alcoholide of fatty acid.

Claim 25. (Previously Amended) The method according to claim 21, wherein the polybasic acid is at least one selected from the group consisting of anhydrous phthalic acid, isophthalic acid, terephthalic acid, adipic acid, azelaic acid, sebacic acid, anhydrous tetrahydrophthalic acid, anhydrous maleic acid, fumaric acid, itaconic acid, trimellitic acid, anhydrous trimellitic acid, anhydrous pyromellitic acid, succinic acid, cy- clohexane dicarboxylic acid, naphthalene dicarboxylic acid, dimeric acid and
C6-C25 fatty acids.

Claim 26. (Previously Amended) The method according to claim 21, wherein the polybasic acid is used in an amount of 1 to 50% by weight, based on the weight of the depolymerization product in step (a).

Claims 27-39. (Previously Cancelled)